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Towards an online design studio - A study of social networking in design distance learning

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Abstract: In this paper we examine the role of social networking and online community building in distance design learning. We analysed interactions of Facebook, a popular social network site, using qualitative content analysis and social network analysis. Two distinct learner identities could be identified – a design course Content Focused Learner and a course Context Centred Socialiser. We discuss the implications of this finding particularly in respect to online design studio education.

Keywords: Design Studio, Distance Learning, Social Networking, Facebook

1. Introduction

In the 21st century the 'design studio' continues to have a powerful influence on the creation of environments for teaching and learning in art and design. In a design studio, students learn through a direct involvement in design projects and by socially interacting with other students and their tutors. The model of studio teaching as a community of experts and novices has proved particularly effective for developing sensitivities to those classic but fugitive elements of design education such as problem finding and problem solving, teamwork, sensitivity to market opportunities, 'eye' for detail and the ability to generate innovation. Indeed, one of the main reasons of the success of studio teaching in design education is often attributed to its social nature. The studio model has fostered the type of enculturation into practice that modern schemes for distributed situated learning are just coming to understand.

In distance design education, students often develop their design abilities through a direct involvement in design projects – just as it happens in the traditional studio teaching. However, although project based learning is a relatively common practice in distance design education, learning itself remains a 'lonely' experience that lacks the dynamics and benefits of a social environment. Community building in particular has been problematic partly due to students being distributed across a wide geographic area. Normally they juggle part-time study with the demands of full time employment and family commitments resulting in limited time to establish relationships with other students and their tutors. In response to this challenge we established a social networking group site in Facebook in order to explore and evaluate the possibility of creating a community of distance design learners. The study is part of a wider inquiry at the Open University, UK that seeks to define what kinds of tools and activities might help us establish a modern online design studio.

This paper presents preliminary findings from a study involving second level part-time students at the Open University. Before we proceed to the presentation of the findings we discuss some general theoretical issues and

present the adopted methodology. The paper concludes with a discussion about the possibilities offered by using social networking applications for community based learning in distance design education.

2. Background

Design studio teaching has a long history. Casalegno and Sass [4] traced back the beginnings of design studio education to French architecture schools in 1823. The MIT Boston architecture school adopted this model in 1860. The design studio is characterised as an open-plan collaborative environment where students follow the work of their peers through formal presentations and informal conversations [4]. Ashton and Durling [1] speak of appraisal situations that allow students to check whether they are on the right track and 'do the right things'. Such 'reflection-in-action' has been recognised as one of the most important learning strategies in design studio education [18]. Schön argued that applying the standards of 'university professional schools' often couldn't solve large real-life problems. To resolve this problem he proposed the notion of reflection in action, where knowledge is acquired by professional practice and reflective discourse. Thinking of and within a problem setting is never detached from the problem and *discourse* of applied solution finding. The theory of reflection in action has a strong verbal dimension. "The novice learner undergoes a series of graduated problems under the close supervision of a master practitioner serving as a 'coach.' The novice learns the vocabularies of the professional practice in the course of learning its 'operational moves'" [21]. These moves also include meta-reflection i.e. talking about the way of reflection in action.

In the early 1990's, academics became interested in Virtual Design Studios (VDS) [12, 15, 10]. While at the beginning technological experiments were of prime concern, pedagogical principles in VDS settings were examined shortly thereafter [10]. Kvan argues that in VDS, the tutor has to consider diverse settings and new media and conventions of communication in order to achieve the desired learning effect of reflection-in-action. Shao et al. [15] recently argued that the level of social engagement in Social Network Sites (SNS) mirrors the practices and patterns of traditional design studios. In both settings, dialogue among peers and with tutors takes a prominent role. Boyd defines SNS as "web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system." In SNS, dialogue between groups of friends or peers is the central activity. Discourse and communication are key aspects in building online communities. For example, one of Facebook's prominent features is the 'newsfeeds', which are automatic notifications of changes in a friend's life online. These updates create 'ambient awareness' where one can sense the mood, interests and views of a friend.

We are asking what relevance might these activities have for design learning in VDS? For example, one study reports that "participants who accessed the Facebook website of a teacher high in self-disclosure anticipated higher levels of motivation and affective learning and a more positive classroom climate" [11]. Although many of the social relationships that are developed in SNS are 'weak-ties', it has been found that weak-ties may significantly expand a person's ability to solve problems [20]. In VDS settings, weak-ties might offer creativity beyond the known world of ideas among intimate friends. Gaining 'ambient awareness' of activities of weak-tie peers allows for building trust, which is a prerequisite for collaborative design learning [10]. It is important,

because distributed design students will not share their learning through practical experiences with co-students if they do not trust them. Literature suggests that a strong reason for participating in SNS is to strengthen their relation to existing, even though weak-tie friends, and their affiliation to university or even a specific university course [2]. In his presentation of statistical data on the use of social media, Scholz [17] noted that reasons for using these media were, among others, to "spark one's creativity" to "archive and distribute artwork" and "find like minded people". In the light of these findings, a strong argument can be made for using social network sites, such as Facebook in distance design education. SNS have been explored in diverse learning settings. However, little is known about their role in distance design education. The present paper looks at Facebook as one example of SNS, which can be used in distance design education, and explores its possible role.

3. Methodology

3.1 Setting

Students at the Open University study learning materials individually at a distance. These include readings, doing exercises and completing several Tutor-Marked Assignments (TMA's) that are part of the formal summative assessment of the course. Students can also take advantage of regular face-to-face tutorials that are voluntary. In addition, an online discussion forum is used to discuss learning informally with other students or to seek tutors' advice.

The design group at the Open University was awarded a research grand by JISC (Joined Information Systems Committee) to study curriculum and programme delivery innovations in distance design learning over a period of 2 years. Within the first year, a succession of six independent explorative studies on curriculum delivery innovations were set out to examine the potential of new Web 2.0 technologies to foster an online design studio atmosphere in distance design learning. The study we report about in this paper is one of these six studies. It examines the use of Facebook by Open University 2nd level part-time distance design students over a period of 5 months and it is organised in two stages. In stage one, following an open call for participation, thirteen students were invited to participate in a 4-week 'guided study' using Facebook. The two researchers who set up the Facebook group, did not tutor students, but initiated extra-curricula activities that were meant to consolidate learning from the course readings and exercises. Most participants of this study were already members of Facebook. Facebook offers several functionalities, such as Forum discussions, wall posts, video or link posts, and picture upload and commenting. Several tasks, such as ice breaking exercises, topical discussions, and posting of pictures of models were initiated either by the facilitators or by students themselves within the Group. In the 2nd stage we simply observed how the original group of students, as well as others who joined later, appropriated the Facebook group on their own, without the participation of the researchers.

3.2 Approach, Methods and Analysis

The overall research project follows an action research (AR) approach. AR has a long history in the context of pedagogical research. The Goal of using AR is to achieve practical improvements and changes in current practice of teaching and learning. AR is used to understand the effects of implementing a new initiative or technology where one is uncertain how effective it might be. The 'Action' of implementing new technologies, such as Facebook, is thus used as research tool for better understanding practice in design teaching and learning.

For the Facebook study we collected two types of data. The first set of data came from a questionnaire that was sent to the participants after the first part of the study. The questionnaire contained 7 open-ended questions soliciting students' views and experience about the role and potential value of the created Facebook Group. The second set of data came from the postings and discussions on the Group Wall, the Group Forums and the students' Personal Wall. Initially, the data were analyzed inductively using the method of 'constant comparison' known from the grounded theory analysis approach [19]. In constant comparison, the two researchers individually developed tentative themes. These themes were consolidated and compared to existing theories. In a discussion of the analysis of the data between the two researchers a new hypothesis was formed. We hypothesised that Facebook plays a role in supporting two kinds of learners in design – 'Content Focused Learners', who discuss concrete examples, artefacts or methods for designing, and 'Context Oriented Socialisers', who post updates about their progress in relation to the design course without mentioning explicit activities or results. In a next step, the emerging hypothesis was explored using two methods - social network analysis and qualitative content analysis. In this stage the data were analysed deductively.

4. Findings

In the initial analysis, we observed several themes that seemed to characterise the students' interaction in Facebook such as communication and facilitation, identity and community, awareness, confidence and also enjoyment. From the questionnaire answers we learned that students felt socially more connected with other course participants using Facebook. For example, Bibi said that being a member of the learning group "*created a sense of other students working away at the task too, is again about connection which is valuable with distance learning*". Facebook creates 'ambient awareness' that keeps users informed about 'who others are', 'what others are at' and 'how others feel' [5]. However, we also observed that students used Facebook in different ways to become aware and achieve this feeling of connection and community. Looking at the ways in which students interacted on Facebook, we were able to build a hypothesis of 2 distinct design learner identities, the 'Content Focused Learners' and the 'Context Centred Socialisers', which are represented in Table 1.

	Content Focused Learner	**Context Centred Socialiser**
Personal Wall	• Posting about the course content and context • Or no posting	• Active posting of updates and comments about the context of the course and their own status
Learning Group	Active posting of • TMA content-centred discussions • Artefact-centred discussions • Design problem focused discussions	• Posting Context-centred discussions • Posting course related resources • Or no posting

Table 1. Hypothesis of 'Content Focused Learner' and 'Context Centred Socialiser'
Course content = topical message, specific question, reply to question, advice on problem, solution suggestion
Course context = what learner does/has done for course, learning problems, complaints, enjoyment, mood

The distinction of content and context focused learners was derived from an analysis of the types of messages exchanged between participants. We could identify predominantly 2 kinds of messages. Context messages were for example related to reflecting on group activities or proposing new group activities, but also included posts related to technical or how-to problems, and personal updates. Content messages included exchanges of

resources, discussions of design issues or TMA issues and posting and reflecting on design artefacts uploaded in the photo gallery.

Column 1 in table 1 describes content-focused learning behaviours. Conversations were directed at specific design problems, focused on specific learning goals and centred on artefacts (models that students upload to the group space). For example, Paul posted: *"Hey all being as TMA01 is now out the way I thought maybe we could all take pics of our chair design so that we can see all our different takes on the brief,…".* Those students were rather irregular Facebook users and only visited the group when they posted a question and waited for a reply. They barely posted on their personal wall on Facebook. We generated the hypothesis that these students only use the group space on Facebook and mainly post course content information to the group. In comparison, column 2 in table 1 shows behaviours of other students who were very regular Facebook users – they logged on at least daily and often revisited during the day. Some students frequently posted general updates related to their mood and their study progress in the course and commented on other students' updates. But we generated the hypothesis that these students never discussed a specific design problem or any other course-content related topic on their personal wall. They purely socialized with other students in order to gain awareness. For example, a typical post would be: "*Jessi has to start with the TMA and her mind in BLANK*". A comment from Mark, another student on this update was: "*Start the TMA? I didn't even start with the block reading."* Subsequently, a conversation about deadlines in submitting coursework emerged. We also generated the hypothesis that these students participate less actively in content focused group discussions such as exposing their design solutions in the group space. For example: Jessi said: "*Naah I won't post my chair design, that's embarrassing :P"*.

Boyd and Ellison maintain that SNS are 'identity-driven' (2007). Both, the Socialiser and Focused Learner seem to emerge as distinct identities in our initial analysis. It seemed that both took benefit from connecting in Facebook but in very different ways. While the Focused Learners' idea of community seemed to be more interest or practice-oriented and centred on interactions within the group space, Socialisers felt being part of the course through a personal connection to other students and mainly posted contextual information on their personal wall. Starting with this distinction between 'Content Focused Learners' and 'Context Centred Socialisers', we set out to explore how these identities were materialized within the Facebook environment. For this purpose we pre-categorised students into Focused learners and Socialisers and within these categories there was the possibility to code messages according to whether they were content or context related. During this phase more codes were added: 'social', which indicates posts that were purely social in nature and did not relate to the course, and 'move', which were posts that tried to move a discussion from context to content related issues. The analysis tried to verify or falsify the idea that Focused Learners mainly posted content related messages in the group and Socialisers mainly posted context related messages on the personal wall. In table 2, Bibi, Emma and Paul are Content Focused Learners, while Jessi, Kath, Lotte, Mark, Nana, Sid, and Steffen are Socialisers, and Nic and Teo are facilitators.

Personal Wall	facilitator>content	facilitator>context	facilitator>move	facilitator>social	focused_learner>content	focused_learner>context	focused_learner>move	focused_learner>social	socialiser>content	socialiser>context	socialiser>social	Total
bibi	0	0	0	0	0	0	0	0	0	0	0	**0**
emma	0	0	0	0	2	5	0	0	0	0	0	**7**
paul	0	0	0	0	0	0	0	0	0	0	0	**0**
gigi	0	0	0	0	0	0	0	0	0	14	0	**14**
sam	0	0	0	0	0	0	0	0	0	5	2	**7**
jessi	0	0	0	0	0	0	0	0	0	32	7	**39**
kath	0	0	0	0	0	0	0	0	0	28	1	**29**
lis	0	0	0	0	0	0	0	0	0	1	0	**1**
lotte	0	0	0	0	0	0	0	0	0	11	0	**11**
mark	0	0	0	0	0	0	0	0	0	10	4	**14**
nana	0	0	0	0	0	0	0	0	0	2	1	**3**
sid	0	0	0	0	0	0	0	0	1	1	0	**2**
steffen	0	0	0	0	0	0	0	0	1	2	1	**4**
theo	0	7	0	2	0	0	0	0	0	0	0	**9**
nic	2	10	3	1	0	0	0	0	0	0	0	**16**
Total	**2**	**17**	**3**	**3**	**2**	**5**	**0**	**0**	**2**	**106**	**16**	**156**
context		17		3		5				106	16	**147**
content	2		3		2				2			**9**

Group Space	facilitator>content	facilitator>context	facilitator>move	facilitator>social	focused_learner>content	focused_learner>context	focused_learner>move	focused_learner>social	socialiser>content	socialiser>context	socialiser>social	Total
bibi	0	0	0	0	2	4	1	0	0	0	0	**7**
emma	0	0	0	0	9	3	2	0	0	0	0	**14**
paul	0	0	0	0	3	3	1	0	0	0	0	**7**
gigi	0	0	0	0	0	0	0	0	6	2	0	**8**
sam	0	0	0	0	0	0	0	0	4	4	0	**8**
jessi	0	0	0	0	0	0	0	0	1	2	1	**4**
kath	0	0	0	0	0	0	0	0	0	0	0	**0**
lis	0	0	0	0	0	0	0	0	0	1	0	**1**
lotte	0	0	0	0	0	0	0	0	0	0	0	**0**
mark	0	0	0	0	0	0	0	0	0	2	0	**2**
nana	0	0	0	0	0	0	0	0	0	1	0	**1**
sid	0	0	0	0	0	0	0	0	0	0	0	**0**
steffen	0	0	0	0	0	0	0	0	0	0	0	**0**
theo	4	2	3	0	0	0	0	0	0	0	0	**9**
nic	12	4	5	0	0	0	0	0	0	0	0	**21**
Total	**16**	**6**	**8**	**0**	**14**	**10**	**4**	**0**	**11**	**12**	**1**	**82**
context		6				10				12	1	**29**
content	16		8		14		4		11			**53**

Table 2 Results of testing hypothesis of Content Focused Learners and Context Centred Socialisers using qualitative content analysis of co-occurrences of codes in Tams Analyzer Software.

The table on the left includes posts on the Personal Wall of each participant, and the table on the right includes posts on the Group Space. We can see that Socialisers indeed were very active posting course contextual information on their personal wall (table left, socialiser>context = 106 posts). Focused Learners scarcely posted on the Personal Wall. This confirms a part of our hypothesis. However, surprisingly, both socialisers and focused learners posted course content and context related information in the group space, (table right, socialiser>context=12, socialiser>content=11, focused learner>context=11, focused learner>content=14 and focused learner>move= 4 posts). This apparently contradicts our hypothesis that Socialisers are less active on the group space. However, looking closer at our data we recognized 2 exceptional students, Gigi and Sam, who were labelled Socialisers, but who posted the majority of posts in the group space. Investigating the kinds of posts that these students posted we found that most were content, artefact-centred discussions. This seems to indicate a positive role of artefact-centred discussions in distance design education using social networking sites. Students who are active on the personal wall posting mainly course contextual information can be lured into the course content focused group space through artefact centred discussions.

The great difference in posts on the personal wall and group space by Focused Learners suggests a separation of personal space and 'learning space'. On the other hand, the great number of course contextual posts by Socialisers on the Personal wall and additional posts in the group space indicate an inter-relation between personal and learning space. In order to better understand what kind of community or communities might have been created, we looked at the exchange of messages in the group space, and the structure of the resulting network, using social network analysis [7, 22]. The analysis and visualisation was performed using visone (http://visone.info/). First, we focus on the type of messages exchanged between group members (content-related and context-related messages). We found that there are no participants who are either focused on content, such as assessment or design issues or context, such as technical or personal topics, but all participants exchanged both

types of postings in the group space. However, the number of content-based messages is significantly bigger statistically (P=0.11 in a standard t-Test) than the number of context-based messages. This may mean that although context was important for the creation of a sense of community, the very goal of this community was to share information related to the content and learning objectives of the course. This observation may support the notion that a community of interest was created.

Second, we looked at the social structure of students (Focused Learners and Socialisers) that interacted via the Facebook group space. As it happens in all web groups and forums, there are messages that are directed explicitly to other students but also messages that are directed to the group as a whole. Figure 2a (below left) depicts the social network of students and facilitators that is formed when both types of messages are included and Figure 2b (below right) depicts the social network that is formed when only personal messages via Facebook group space are included. From this analysis it is clear that 'Focused Learners' were using both type of communication: they exchanged personal messages via the group space as well as messages that were addressed the group as a whole. On the contrary, Socialisers (with the exception of Jessi) did not exchange personal messages on the FB group space but only messages that were directed to the group as a whole. So the network in Figure 2b clearly shows a division between 'Socialisers' and 'Focused Learners'. In this sense, Focused Learners have effectively created a distinct social network in the group space.

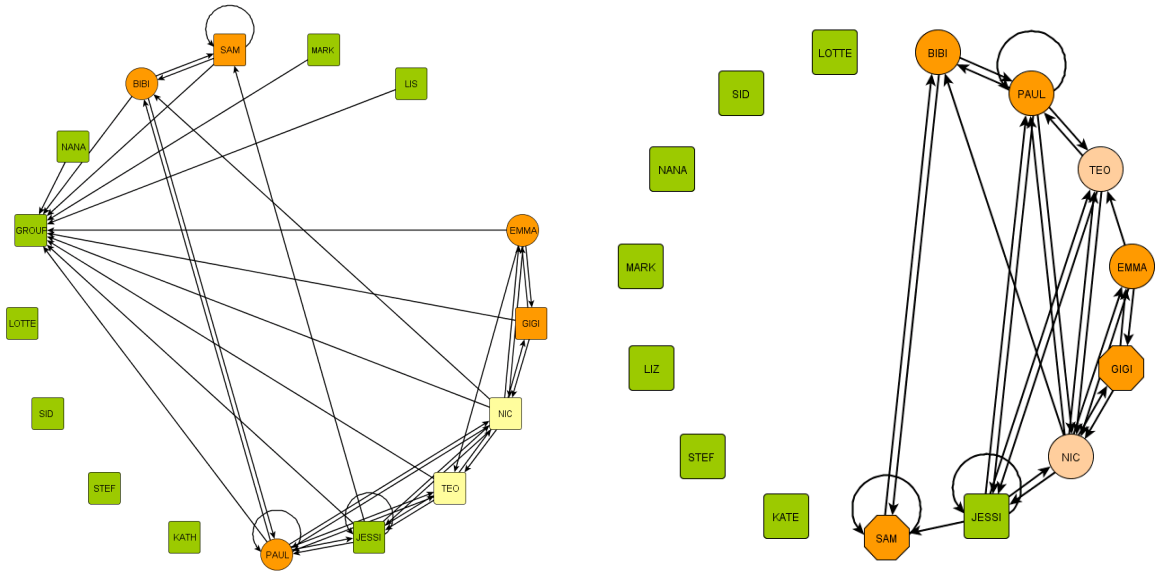

Figure 2: Social network analysis of community structure taking into consideration the type of message exchange. 'Socialisers' are represented by rectangular boxes while 'Focused Learners' are represented by circles. Figure 2a on the left depicts exchange of messages in the group space that are directed to other participants as well as the group as a whole. Figure 2b on the right depicts the exchange of only personal messages in the group space. This shows a clear distinction between Focussed Learners and Socialisers.

However it is important to note that looking at the social connections developed between students on their personal walls we see a very different picture. Socialisers formed tight-knit clusters of 2 or 3, and frequently engaged in course contextual conversations about timing of study and problems they encountered in the motivation to study including learning difficulties. This kind of companionship seems to last throughout the course and also beyond a particular course. However, the group space activity could not be maintained beyond the first 4 weeks of guided study.

Furthermore from the generated network in Figure 3 it is possible to visually identify three subgroups or clusters of participants in the FB group space: {Paul-Jessi-Nic-Teo}, {Nic-Bibi-Emma} and {Bibi-Sam}. The connection between the first two clusters is established through Nic and the connection between the last two through Paul and Bibi. Indeed, these three people played the role of 'broker'; the role of a person that is 'in between' different people. In social network theory this notion is usually identified with a measure (called 'betweeness') that counts the number of times that we need to cross a particular participant in order to transmit information from any participant i to another participant j [6, 13]. In the following network (Figure 3) the person with the higher 'betweeness' is placed in the central ring. Nic (the facilitator) but also two students Per and Bibi played that role of the 'broker' with high degrees of betweeness. This is probably an indication that even if we removed Nic from the network there are students who would keep the connectivity between different subgroups intact.

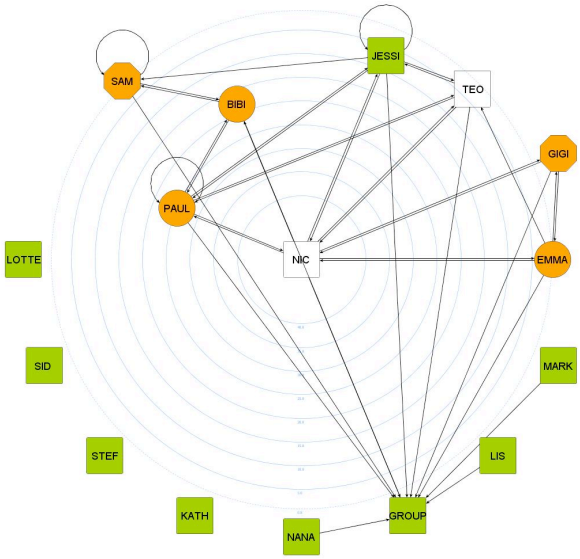

Figure 3: Social network analysis of the degree of 'betweeness' among participants in the group space. Nic, Paul and Bibi act as 'brokers' in this network.

Facilitators often took a role in moving a discussion from contextual issues, to content related issues. Such discussions only occurred in the group space. It is interesting to note that also Focused Learners, like Bibi and Paul initiated this move. This often occurred in conversations around artefacts where students asked specific questions to clarify design issues. So Paul and Bibi, who were identified as 'brokers' in the social network analysis, were also Content Focused Learners who occasionally moved discourse from contextual to content related discussions. It seems that the role of 'broker' may be important not only for keeping the social network connected but also for moving the discussion towards content related issues.

5. Discussion and Conclusions

What role does Facebook have in distance design learning? The traditional design studio is good at creating an environment where students are enculturated into design practice but also into being and feeling like a designer, and knowing about the predominant discourse and opinions. This is often missing in distance design education, which is more focused on specific course related objectives. Facebook seems to be able offer this enculturation into the world of design and also supports course–focused and artefact centred discourse in design.

More specifically, the main role of the Facebook group for distance design learning was in creating an ambient awareness, where students know what others are feeling, thinking and doing locally. This awareness can be created through interactions focussed on the course context and content. Facebook supported two main learner identities, the Socialiser and the Focused Learner. The Socialiser mainly posts course contextual information on the personal wall and in this way builds tight-knit companionship communities with other students in the same course. The Socialiser occasionally also interacts in the course specific group space. Some Socialisers can become more engaged with the group space if the discussions evolve around locally produced design artefacts, which are more likely to be initiated by Focused Learners. Focussed Learners are inactive on the personal wall and also less connected to other students socially outside the group space. However, they do form a clear social network within the group space. Focused learners contribute information about the content and the context of the course. They also take on facilitator roles when they try to move a discussion from context to content focused contributions. Within the group space, Focused Learners and Socialisers build a community of interest.

Many of our observations confirm behaviours and values that underlie traditional design studio education that occurred in the Facebook online environment. Design students in studio environments are in competition to reach the best outcome. Shih et al. [16] analysed design studio interactions based on the prisoners' dilemma game where some choose to defect from sharing information rather than cooperate. We could argue that our Socialisers mainly chose a defection strategy, while Focused Learners chose a cooperation strategy. Shih at al also concluded in their analysis that competition strategies can change during the course of a design project in a studio when students become aware of potential benefits of sharing information instead of holding back. This can be supported by one Socialiser student's quote, Mark: "*seeing chair models of my classmates made me work harder so I can upload and show my work in the future and maybe discuss the tutor's review*". This behaviour may also underlie our finding that artefact-centred discussions seem to promote the use of a content-centred group space by Socialisers and Focused Learners alike. However, it is important to note that the course assignments do not explicitly promote cooperative information sharing strategies. This together with a tight schedule in completing assignments might have pushed students to choose defection over cooperation. For example, Bibi, a Focused Learner said: "*Unfortunately spending longer on the T211 group would have meant spending less time on TMA01, so I needed to make a trade off."* Clearly, if one intends to use SNS in distance design education, appropriate conditions and rewards for sharing information need to be set in place.

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